DETAILED ACTION

Response to Amendment

1. This communication is in response to the Amendment filed on 14 April 2009.

2. Claims 10, 14 and 31-53 are currently pending. In the Amendment filed 15 April 2009, claims 10, 32-34 and 36 are amended and claims 37-53 are new. As a result of the Amendment filed 14 April 2009 and the Examiner's Amendment stated below, claims 10, 14, 31-36, 38-40, 42-44 and 47-50 (renumbered as 1-18) are allowed and claims 1-9, 11-13, 15-30, 37, 41, 45, 46 and 51-53 are canceled.

Terminal Disclaimer

3. The terminal disclaimers filed 18 June 2009 have been approved.

Examiner Amendment

4. Authorization for this examiner's amendment, listed below, was given in a telephone interview with Jordan Becker (Reg. No. 39,602) on 17 June 2009.

In the Claims:

Please amend claims 10, 33, 34, 36, 42 and 47 and cancel claims 37, 41, 45, 46 and 51-53 as follows:

10. (Currently amended) An apparatus comprising:

a storage server, coupled to a network, having a mass storage device;

a multi-appliance management application (MMA) coupled to the network to manage the storage server; and

a server computer including ~~an~~ a first agent coupled to the storage server and the MMA via the network, the first agent to scan a ~~file and~~first subset of a directory structure of the storage server to collect information about a file stored on the storage server, and to combine information collected into a summary of a directory in which the file is located, the summary being accessible to the MMA, wherein the server computer, the MMA, and the storage server are separate devices, wherein the first agent operates independently of the storage server and the MMA, and wherein the first agent uses a file system different from a file system that the storage server uses, wherein the first agent is configured to scan and summarize the first subset of the directory structure of the storage server by

scanning a directory in the storage server to identify child nodes in the directory;

scanning each of the child nodes in the directory in the storage server to collect information about the child nodes;

combining the collected information about the child nodes into the summary of the directory, wherein said combining occurs concurrently with said scanning, for different items of information; and

storing the summary of the directory in a storage facility accessible to the MMA;

the first agent including a directory thread to scan directories and a separate file thread to scan files, wherein the first agent is one of a plurality of agents on the network, a second agent of the plurality of agents being configured to scan and summarize a second subset of the directory structure of the storage server, wherein the second agent operates independently of the first agent, the storage server and the MMA.

33. (Currently amended) The apparatus of claim 10, wherein the first agent uses Common Internet File System (CIFS) or Network File System (NFS).

34. (Currently amended) A method comprising:

causing ~~an~~ a first agent device, of a plurality of independently operable agent devices, to scan a file and directory structure of a storage server to collect information about files maintained by the storage server, including using the first agent to scan and summarize a first subset of a plurality of directories in the storage server, the first agent device including a directory thread to scan directories and a separate file thread to scan files, wherein scanning the file and directory structure of the storage server by the first agent includes

scanning a directory in the storage server to identify child nodes in the directory;

scanning each of the child nodes in the directory in the storage server to collect information about the child nodes;

combining, by the first agent device, information collected into a summary of a directory under which the files are stored, including combining the collected information about the child nodes into the summary of the directory, wherein said combining occurs concurrently with said scanning, for different items of information; ~~and~~

sending the summary from the first agent device to a multi-appliance management application (MMA), wherein the first agent device, the MMA, and the storage server are separate devices, and wherein the first agent device uses a file system different from a file system that the storage server uses; and

causing a second agent device, of the plurality of independently operable agent devices, to scan and summarize a second subset of the plurality of directories in the storage server, wherein the first agent device operates independently of the storage server and the MMA, and wherein the second agent device operates independently of the first agent device, the storage server and the MMA.

36. (Currently amended) The method of claim 34, wherein the first agent device uses Common Internet File System (CIFS) or Network File System (NFS).

37. (Canceled)

41. (Canceled)

42. (Currently amended) A method comprising the steps of:

a) using a directory thread in ~~an~~ a first agent, of a plurality of agents on a network, to scan and summarize a first subset of a plurality of directories in a storage server on the network, including using the first agent to scan a directory in ~~a~~ the storage server ~~on the network~~ to identify contents of the directory, the first agent being implemented in a server computer, separate from the storage server, on the network, wherein the first agent uses a file system different from a file system that the storage server uses;

b) determining, by the first agent, a number of child nodes in the directory in the storage server and incrementing a reference count by the number;

c) scanning, by the first agent, a child node in the directory in the storage server to collect information about the child node, wherein said scanning includes using a file thread in the first agent to scan and determine characteristics of a file in the directory;

d) combining, by the first agent, the collected information about the child node into a summary of the directory, the summary including a histogram;

e) decrementing the reference count after scanning the child node;

f) repeating said steps c) through e) for each of one or more additional child nodes in the directory until the reference count equals a predetermined value, wherein said combining occurs concurrently with said scanning, for different items of information; ~~and~~

g) storing, by the first agent, the summary of the directory in a storage facility accessible to a multi-appliance management application (MMA) configured to manage the storage server, wherein the first agent operates independently of the storage server and the MMA; and

h) using a second agent of the plurality of agents on the network, to scan and summarize a second subset of the plurality of directories in the storage server, wherein the second agent operates independently of the first agent, the storage server and the MMA.

45. (Canceled)

46. (Canceled)

47. (Currently amended) A computer system comprising:

a processor;

a ~~communicate~~ communication interface, coupled to the processor, through which to communicate with a storage server on a network; and

~~an~~ a first agent, of a plurality of agents on the network, which configures the processor to execute a process that includes a set of steps, including

scanning and summarizing a first subset of a plurality of directories in the storage server, including

scanning a directory in the storage server to identify child nodes in the directory;

scanning each of the child nodes in the directory in the storage server to collect information about the child nodes; and

combining the collected information about the child nodes into a summary of the directory, wherein said combining occurs concurrently with said scanning, for different items of information; ~~and~~

storing the summary of the directory in a storage facility accessible to a storage management application configured to manage the storage server, wherein the agent is operable independently of the storage server and the storage management application;

wherein the first agent uses a file system different from a file system that the storage server uses; and wherein the first agent includes a directory thread to scan a directory in the storage server to identify contents of the directory and a file thread to scan and determine characteristics of a file in the directory, wherein the first agent device operates independently of the storage server and the storage management application; and

a second agent of the plurality of agents configured to scan and summarize a second subset of a plurality of directories in the storage server.

51. (Canceled)

52. (Canceled)

53. (Canceled)

Reasons for Allowance

5. The following is an examiner's statement of reasons for allowance:

In the Examiner's Non-Final Office Action dated 6 February 2009, claims 10, 14 and 31-36 were rejected under 35 USC 103 based primarily on US Patent No 6,571,257 to Duggan et al and US PGPub 2008/0091739 to Bone et al.

The claimed invention is directed towards an apparatus, a system and methods for utilization of agents to scan and collect information about directories of the storage server in the form of a summary, wherein the summary is managed by an independent multi-appliance management application.

The prior art of record, Duggan and Bone, do not show, teach or suggest the combined limitations of **a first agent to scan a first subset of a directory structure of the storage server to collect information about a file stored on the storage server, and to combine information collected into a summary of a directory in which the file is located, the summary being accessible to the MMA, wherein the server computer, the MMA, and the storage server are separate devices, wherein the server computer, the MMA, and the storage server are separate devices, wherein**

the first agent operates independently of the storage server and the MMA, and wherein the first agent uses a file system different from a file system that the storage server uses; the first agent **combining the collected information about the child nodes into the summary of the directory, wherein said combining occurs concurrently with said scanning, for different items of information; and the first agent including a directory thread to scan directories and a separate file thread to scan files, wherein the first agent is one of a plurality of agents on the network, a second agent of the plurality of agents being configured to scan and summarize a second subset of the directory structure of the storage server, wherein the second agent operates independently of the first agent, the storage server and the MMA**, in combination with the other claimed features.

While Duggan discloses the management of storage resources, Duggan fails to explicitly disclose the concepts of the first and second agents performing the claimed functions, agents that are separate from the MMA and agents that use a file system that is different from a file system that the storage server uses. While Bone teaches the management of file systems, Bone fails to overcome the deficiencies of Duggan.

An updated search for prior art on the EAST database and on domains (NPL-Google and ACM) has been conducted. The prior art searched and investigated in the database and domains does not fairly teach or suggest the teaching of the claimed subject matter as described above and reflected by the combined elements in independent claims 10, 34, 42 and 47. Dependent claims 14, 31-33, 35, 36, 38-40, 43, 44 and 48-50 are indicated as being allowable for the same reasons stated above in

regards to the independent claims.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KIMBERLY LOVEL whose telephone number is (571)272-2750. The examiner can normally be reached on 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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16 June 2009
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